Listing of All Claims

1. (Previously presented) A system for identifying transmission delay in a communication network comprising:

a data source adapted to generate a sequence of bits;

a demodulator adapted to synchronize with the sequence of bits by shifting samples of the sequence of bits until an optimum synchronization value is generated; and

a synchronizer adapted to identify a network delay value according to the synchronized sequence of bits.

2. (Previously presented) A system according to claim 1 including an encoder adapted to convert the sequence of bits into tones.

3. (Previously presented) A system according to claim 2 wherein the demodulator synchronizes with the sequence of bits by shifting samples of the tones until a maximum power ratio is detected for a bit pattern associated with the sequence of bits.

4. (Previously presented) A system according to claim 1 including a packet formatter adapted to format the sequence of bits into a packet having a preamble that identifies the packet as a synchronization packet.

5. (Previously presented) A system according to claim 4 wherein the packet formatter inserts bits in the packet that identify a turn around time representing an amount of time required to receive the synchronization packet and then output a reply synchronization packet.

6. (Previously presented) A system according to claim 2 wherein the encoder converts binary "1" bits in the sequence of bits to a first tone having a first audio frequency and converts binary "0" bits in the sequence of bits to a second tone having a second audio frequency.

7. (Previously presented) A system according to claim 6 wherein the demodulator compares samples of the first audio tone with samples of the second audio tone and synchronizes with the sequence of bits by shifting a sample start time for the samples of the first and second audio tones until the optimum synchronization value is detected.

8. (Previously presented) A system according to claim 7 wherein the network delay value is identified according to a reference bit in the sequence of bits located according to the sample start time at the optimum synchronization value.

9. (Previously presented) A system according to claim 2 including:

a digital to analog converter that converts the tones for the sequence of bits into analog signals; and

a voice codec that encodes the analog signals for transmission over a voice channel in the communications network.

10. (Previously presented) A system according to claim 9 wherein at least a portion of the communications network is a wireless cellular network and the voice codec encodes both voice signals and the analog signals for the sequence of bits for transmission over the voice channel in the wireless cellular network.

11. (Currently amended) A method for identifying network delay, comprising:

receiving tones that represent a sequence of bits, one of the bits identified as a reference bit;

sampling the tones beginning at a selected sample start time;

demodulating the tone samples to identify the bit values in [[the]]a synchronization flag;

synchronizing with the tone samples by shifting the sample start time until the tone samples generate an optimum synchronization value; and

deriving a reference time according to the reference bit at the optimum synchronization value.

12. (Currently amended) A method according to claim 11 including:

identifying an initial time when the reference bit is first transmitted to a mobile station;

receiving the sequence of bits back from the mobile station;

synchronizing with the sequence of bits;

identifying a final time when the reference bit is received in the synchronized sequence of bits; and

deriving a delay time by comparing the initial time with the final time.

13. (Previously presented) A method according to claim 11 wherein the tones are received over a voice channel in a wireless cellular network.

14. (Currently amended) A method according to claim 11 including:

sampling the tones for a first frequency representing a binary 1 value;

sampling the tones for a second frequency representing a binary 0 value;

generating synchronization values by comparing the tone samples for the first frequency with the tone samples for the second frequency; and

shifting the sample start time for the tone samples [[of]]for the first frequency[[tone]] and second [[tone]]frequency until the optimum synchronization value is derived.

15. (Previously presented) A method according to claim 14 including deriving the reference time by identifying one of the tone samples at the optimum synchronization value associated with the reference bit.

16. (Previously presented) A method according to claim 11 including formatting the sequence of bits into a packet and synchronizing with the sequence of bits in the packet.

17. (Previously presented) A method system according to claim 16 including inserting bits in the packet that identify a turn around time representing an amount of time required to process the packet containing the sequence of bits.

18. (Previously presented) A computer readable medium containing code for identifying network delay, comprising:

code adapted to receive tones that represent a sequence of bits;

code adapted to sample the tones beginning at a selected sample start time;

code adapted to demodulate the sampled tones back into bit values representing the sequence of bits;

code adapted to synchronize with the sequence of bits by shifting the sample start time until the sampled tones generate an optimum synchronization value; and

code adapted to derive a reference time according to the sample start time at the optimum synchronization value.

19. (Currently amended) Code according to claim 18 including:

code adapted to identify an initial time when the sequence of bits are first transmitted;

code adapted to receive the sequence of bits back from a remote station;

code adapted to synchronize with the returned sequence of bits;

code adapted to identify a final time according to the synchronized returned sequence of bits; and

deriving a network delay time by comparing the initial time with the final time.

20. (Previously presented) Code according to claim 18 wherein the tones are received over a voice channel in a network.

21. (Currently amended) Code according to claim 18 including:

code adapted to sample the tones for a first frequency representing a binary 1 value;

code adapted to sample the tones for a second frequency representing a binary 0 value;

code adapted to generate synchronization values by comparing the tone samples for the first [[tone]] frequency with the tone samples for the second [[tone]] frequency; and

code adapted to shift the sample start time for the tone samples of the first [[tone]] frequency and second [[tone]] frequency until the optimum synchronization value is derived.

22. (Previously presented) Code according to claim 18 including:

code adapted to receive a packet having a preamble that identifies the sequence of bits; and

code adapted to synchronize with the sequence of bits in the packet.

23. (Previously presented) Code according to claim 22 including code that inserts bits in the packet that identify a turn around time representing an amount of time required to process the packet containing the sequence of bits.